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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO. <i>T-P</i>
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EXAMINER

ART UNIT	PAPER NUMBER <i>12</i>
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DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 1-14Applicant(s) R. J. ...Examiner ...Group Art Unit ...

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THIRTY MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 08/14/99

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-14 is/are pending in the application.
- Of the above claim(s) 1-5 and 11-14 is/are withdrawn from consideration.
- ☐ Claim(s) is/are allowed.
- ☒ Claim(s) 1-10 is/are rejected.
- ☐ Claim(s) is/are objected to.
- ☐ Claim(s) are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The proposed drawing correction, filed on _____ is approved ☐ disapproved ☐.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some ☐ None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) _____

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 1-2 Interview Summary, PTO-413
- ☒ Notice of Reference(s) Cited, PTO-892 ☐ Notice of Informal Patent Application, PTO-152
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948 ☐ Other _____

Office Action Summary

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Part III DETAILED ACTION

Restriction

1. Restriction is required by the following provisions of the Manual of Patent Examining Procedure under 35 U.S.C. 121:

Group I. Claims 1-8, drawn to an apparatus for producing castings with directional and single crystal structure, classified in Class 104, subclass 38-1.

Group II. Claims 9-10, drawn to a method for producing castings with directional and single crystal structure, classified in Class 104, subclass 38-1.

Group III. Claims 11-14, drawn to an apparatus with directional and single crystal structure, classified in Class 104, subclass 38-1.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions Group I and Group II are related as to the apparatus for its practice. The inventions are distinct in that it can be shown that either: 1. the process as claimed can be practiced by either materially different apparatus or by means, or 2. the apparatus as claimed can be used to practice either

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and materially different process. Where the product as claimed can be made by a process as claimed and a materially different apparatus such as a reaction vessel and an inert gas cooling chamber.

Inventions Group II and Group III are related as process and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process. Where the product as claimed can be made by another and materially different process such as process and cooling.

Inventions Group I and Group III are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus. Where the product as claimed can be made by another and

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materially different apparatus such as a casting machine for an inert gas molding machine.

3. Because these inventions are distinct for the reasons given above and have required a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Roy L. Mason on December 17, 1961 a provisional election was made without traverse to prosecute the invention of Group II, claims 1-11. Affirmation of this election was made by applicant in responding to this Office action. Claims 1-10 and 12-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142 b, as being drawn to a non-elected invention.

5. Applicant is reminded that if the prosecution of claim 11 to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.49 b. If the name of the currently named inventor is not shown as inventor of at least one claim remaining in the application, any amendment of inventorship must be accompanied by a diligently-titled

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petition under 35 CFR 1.42(b) and the fee required under 35 CFR 1.17(b).

4. Claims 4-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 4, line 1, "furnace relative to a heater" is unclear because "relative to" is unclear; lines 4-7, "it is required that" is not quantitatively defined; last line, where "the water" comes from? Further, "the water-filled walls" lacks antecedent basis.

103 rejection

5. The following is a quotation of 35 U.S.C. 103(a) which defines the basis for all obviousness rejections under this act:

Article 103(a):

A patent may not be obtained in the United States for an invention which is obvious to a person having ordinary skill in the art to which the invention pertains from the teachings of the prior art consisting of patents and teachings contained in any number of references. The phrase "obvious to a person having ordinary skill in the art" is a legal conclusion based on the facts and circumstances. It is not sufficient that the invention is a logical consequence of the prior art. The invention must be such that it would have been obvious to a person having ordinary skill in the art at the time the invention was made.

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7. This application is currently named "but" and is being considered for patentability. In the absence of any prior art, the examiner presumes that the subject matter of the various claims was commonly known at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the invention and invention dates of each claim that was not commonly known at the time a later invention was made in order for the examiner to consider the applicability of U.S.C. 102(a)(2) to the prior art. U.S.C. 102(a)(2) is a prior art under U.S.C. 102(a).

8. Claims 1-10 are rejected under 35 U.S.C. 102(a)(2) as being unpatentable over XP 111,111 (see abstract) and XP 111,111 (see abstract) and further in view of Salke, et al. (see abstract) and XP 111,111 (see abstract). XP 111,111 (see abstract) teaches the claimed method of producing a material with a specific crystal structure, comprising: placing a material in a furnace; heating the material to a temperature about 100 to 150 °C; heating the material to a temperature about 100 to 150 °C; see abstract, line 18 in XP 111,111 (see abstract) and XP 111,111 (see abstract); lowering the heated material to a temperature about 100 to 150 °C; and

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the mold from a heating zone and the mold is surrounded by a tank of cooling molten metal in a tank of liquid metal which is heated at a controlled rate (speed). XP '341 or PP '341 teaches to teach radiation cooling of removing the radiation heat emitted from the mold surface to a tank surface with or without any use of convection or convection of liquid metal in the tank. However, XP '338 teaches radiation cooling for the purpose of effectively directionally solidifying the molten alloy without drawing crack in the mold.

In view of the prior art as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide XP '341 or PP '341 with radiation cooling method as taught by XP '338 such that the radiation cooling metal is required to be the tank in the mold to be solidified. The radiation emitted from the heated mold surface is transmitted away by the tank surfaces in order to effectively directionally solidify the molten alloy without drawing crack in the mold. Insofar as combined, XP '341 or PP '341 in view of XP '338 teaches to teach the use of water-cooled means for the tank of liquid metal without any liquid metal. However, Salkeld et al. teaches to teach the use of water-cooled means and a buffer material between the heating zone and the solidification zone of liquid metal.

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in view of the prior art as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further provide the mold with a cooling means in view of JP '336 with a water-cooled means as taught by Dorciath et al in order to effectively remove radiational heat from the tank surface and directionally solidify the molten alloy without drawing crack in the mold, which contains radiational heat in a the posterior part of the mold.

[illegible]

Any inquiry of a general nature for information should be directed to the appropriate official or official of the Department of Defense, Office of the Inspector General, Washington, D.C. 20301, telephone number DA-443-1341.

[illegible]

1. *Phragmites* (common)

[Signature]
HAROLD PYON
SUPERVISORY PATENT EXAMINER

10/10/02